<u>RAW SEQUENCE LISTING</u>

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: _10/587,450_

Source: _1 FWP_

Date Processed by STIC: _8/10/06_

ENTERED

IFWP

RAW SEQUENCE LISTING   DATE: 08/10/2006
PATENT APPLICATION: US/10/587,450   TIME: 10:46:41

Input Set : **F:\14184-041US1.txt**
Output Set: **N:\CRF4\08102006\J587450.raw**

```
   4 <110> APPLICANT: Currie, Mark G.
   7 <120> TITLE OF INVENTION: METHODS AND COMPOSITIONS FOR THE
   8       TREATMENT OF GASTROINTESTINAL DISORDERS
  11 <130> FILE REFERENCE: 14184-041US1
C--> 13 <140> CURRENT APPLICATION NUMBER: US/10/587,450
C--> 13 <141> CURRENT FILING DATE: 2006-07-27
  13 <150> PRIOR APPLICATION NUMBER: PCT/US2005/002941
  14 <151> PRIOR FILING DATE: 2005-01-31
  16 <150> PRIOR APPLICATION NUMBER: US 60/540,675
  17 <151> PRIOR FILING DATE: 2004-01-30
  19 <160> NUMBER OF SEQ ID NOS: 4733
  21 <170> SOFTWARE: FastSEQ for Windows Version 4.0
  23 <210> SEQ ID NO: 1
  24 <211> LENGTH: 16
  25 <212> TYPE: PRT
  26 <213> ORGANISM: Artificial Sequence
  28 <220> FEATURE:
  29 <223> OTHER INFORMATION: Synthetically generated peptide
  31 <220> FEATURE:
  32 <221> NAME/KEY: VARIANT
  33 <222> LOCATION: 1
  34 <223> OTHER INFORMATION: Xaa = Ser, Asn, Tyr, Ala, Gln, Pro, Lys, Gly, or
  35       Thr, or is missing
  37 <220> FEATURE:
  38 <221> NAME/KEY: VARIANT
  39 <222> LOCATION: 2
  40 <223> OTHER INFORMATION: Xaa = His, Asp, Glu, Ala, Ser, Asn, Gly, or is
  41       missing
  43 <220> FEATURE:
  44 <221> NAME/KEY: VARIANT
  45 <222> LOCATION: 3
  46 <223> OTHER INFORMATION: Xaa = Thr, Asp, Ser, Glu, Pro, Val or Leu
  48 <220> FEATURE:
  49 <221> NAME/KEY: VARIANT
  50 <222> LOCATION: 5
  51 <223> OTHER INFORMATION: Xaa = Asp, Ile or Glu
  53 <220> FEATURE:
  54 <221> NAME/KEY: VARIANT
  55 <222> LOCATION: 6
  56 <223> OTHER INFORMATION: Xaa = Ile, Trp or Leu
  58 <220> FEATURE:
  59 <221> NAME/KEY: VARIANT
  60 <222> LOCATION: 7
```

RAW SEQUENCE LISTING   DATE: 08/10/2006
PATENT APPLICATION: US/10/587,450   TIME: 10:46:41

          Input Set : F:\14184-041US1.txt
          Output Set: N:\CRF4\08102006\J587450.raw

 61 <223> OTHER INFORMATION: Xaa = Cys, Ser, or Tyr
 63 <220> FEATURE:
 64 <221> NAME/KEY: VARIANT
 65 <222> LOCATION: 8
 66 <223> OTHER INFORMATION: Xaa = Ala, Val, Thr, Ile, Met or is missing
 68 <220> FEATURE:
 69 <221> NAME/KEY: VARIANT
 70 <222> LOCATION: 9
 71 <223> OTHER INFORMATION: Xaa = any amino acid; or Phe, Tyr, Asn, Trp; or an
 72   amino acid other than Phe, Trp, or Tyr; or
 73   non-aromatic amino acid ; or is missing
 75 <220> FEATURE:
 76 <221> NAME/KEY: VARIANT
 77 <222> LOCATION: 10
 78 <223> OTHER INFORMATION: Xaa = Ala, Val, Met, Thr or Ile
 80 <220> FEATURE:
 81 <221> NAME/KEY: VARIANT
 82 <222> LOCATION: 11
 83 <223> OTHER INFORMATION: Xaa = Ala or Val
 85 <220> FEATURE:
 86 <221> NAME/KEY: VARIANT
 87 <222> LOCATION: 13
 88 <223> OTHER INFORMATION: Xaa = Ala or Thr
 90 <220> FEATURE:
 91 <221> NAME/KEY: VARIANT
 92 <222> LOCATION: 14
 93 <223> OTHER INFORMATION: Xaa = Gly, Ala or Ser
 95 <220> FEATURE:
 96 <221> NAME/KEY: VARIANT
 97 <222> LOCATION: 15
 98 <223> OTHER INFORMATION: Xaa = Cys, Tyr or is missing
100 <220> FEATURE:
101 <221> NAME/KEY: VARIANT
102 <222> LOCATION: 16
103 <223> OTHER INFORMATION: Xaa = Trp, Tyr or Phe ; or Lys or Arg ; or is
104   missing ; or His, Leu or Ser
106 <400> SEQUENCE: 1
W--> 107 Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa
108 1   5   10   15
111 <210> SEQ ID NO: 2
112 <211> LENGTH: 491
113 <212> TYPE: PRT
114 <213> ORGANISM: Homo sapiens
116 <400> SEQUENCE: 2
117 Met Ala Leu Leu Trp Gly Leu Leu Val Leu Ser Trp Ser Cys Leu Gln
118 1   5   10   15
119 Gly Pro Cys Ser Val Phe Ser Pro Val Ser Ala Met Glu Pro Leu Gly
120   20   25   30
121 Arg Gln Leu Thr Ser Gly Pro Asn Gln Glu Gln Val Ser Pro Leu Thr

```
122             35                    40                    45
123 Leu Leu Lys Leu Gly Asn Gln Glu Pro Gly Gly Gln Thr Ala Leu Lys
124     50                    55                    60
125 Ser Pro Pro Gly Val Cys Ser Arg Asp Pro Thr Pro Glu Gln Thr His
126 65                    70                    75                    80
127 Arg Leu Ala Arg Ala Met Met Ala Phe Thr Ala Asp Leu Phe Ser Leu
128                 85                    90                    95
129 Val Ala Gln Thr Ser Thr Cys Pro Asn Leu Ile Leu Ser Pro Leu Ser
130                 100                   105                   110
131 Val Ala Leu Ala Leu Ser His Leu Ala Leu Gly Ala Gln Asn His Thr
132             115                   120                   125
133 Leu Gln Arg Leu Gln Gln Val Leu His Ala Gly Ser Gly Pro Cys Leu
134     130                   135                    140
135 Pro His Leu Leu Ser Arg Leu Cys Gln Asp Leu Gly Pro Gly Ala Phe
136 145                   150                   155                   160
137 Arg Leu Ala Ala Arg Met Tyr Leu Gln Lys Gly Phe Pro Ile Lys Glu
138                 165                   170                   175
139 Asp Phe Leu Glu Gln Ser Glu Gln Leu Phe Gly Ala Lys Pro Val Ser
140             180                   185                   190
141 Leu Thr Gly Lys Gln Glu Asp Asp Leu Ala Asn Ile Asn Gln Trp Val
142             195                   200                   205
143 Lys Glu Ala Thr Glu Gly Lys Ile Gln Glu Phe Leu Ser Gly Leu Pro
144     210                   215                   220
145 Glu Asp Thr Val Leu Leu Leu Leu Asn Ala Ile His Phe Gln Gly Phe
146 225                   230                   235                   240
147 Trp Arg Asn Lys Phe Asp Pro Ser Leu Thr Gln Arg Asp Ser Phe His
148             245                   250                   255
149 Leu Asp Glu Gln Phe Thr Val Pro Val Glu Met Met Gln Ala Arg Thr
150             260                   265                   270
151 Tyr Pro Leu Arg Trp Phe Leu Leu Glu Gln Pro Glu Ile Gln Val Ala
152     275                   280                   285
153 His Phe Pro Phe Lys Asn Asn Met Ser Phe Val Val Leu Val Pro Thr
154     290                   295                   300
155 His Phe Glu Trp Asn Val Ser Gln Val Leu Ala Asn Leu Ser Trp Asp
156 305                   310                   315                   320
157 Thr Leu His Pro Pro Leu Val Trp Glu Arg Pro Thr Lys Val Arg Leu
158             325                   330                   335
159 Pro Lys Leu Tyr Leu Lys His Gln Met Asp Leu Val Ala Thr Leu Ser
160     340                   345                   350
161 Gln Leu Gly Leu Gln Glu Leu Phe Gln Ala Pro Asp Leu Arg Gly Ile
162     355                   360                   365
163 Ser Glu Gln Ser Leu Val Val Ser Gly Val Gln His Gln Ser Thr Leu
164     370                   375                   380
165 Glu Leu Ser Glu Val Gly Val Glu Ala Ala Ala Thr Ser Ile Ala
166 385                   390                   395                   400
167 Met Ser Arg Met Ser Leu Ser Ser Phe Ser Val Asn Arg Pro Phe Leu
168                 405                   410                   415
169 Phe Phe Ile Phe Glu Asp Thr Thr Gly Leu Pro Leu Phe Val Gly Ser
170             420                   425                   430
```

RAW SEQUENCE LISTING   DATE: 08/10/2006
PATENT APPLICATION: US/10/587,450   TIME: 10:46:41

Input Set : F:\14184-041US1.txt
Output Set: N:\CRF4\08102006\J587450.raw

171 Val Arg Asn Pro Asn Pro Ser Ala Pro Arg Glu Leu Lys Glu Gln Gln
172   435   440   445
173 Asp Ser Pro Gly Asn Lys Asp Phe Leu Gln Ser Leu Lys Gly Phe Pro
174   450   455   460
175 Arg Gly Asp Lys Leu Phe Gly Pro Asp Leu Lys Leu Val Pro Pro Met
176 465   470   475   480
177 Glu Glu Asp Tyr Pro Gln Phe Gly Ser Pro Lys
178   485   490
181 <210> SEQ ID NO: 3
182 <211> LENGTH: 29
183 <212> TYPE: PRT
184 <213> ORGANISM: Hirudinaria manillensis
186 <220> FEATURE:
187 <221> NAME/KEY: VARIANT
188 <222> LOCATION: 23
189 <223> OTHER INFORMATION: Xaa = any amino acid
191 <400> SEQUENCE: 3
192 Val Asp Glu Lys Ala Glu Val Thr Asp Gly Leu Cys Gly Asp Trp Thr
193 1   5   10   15
W--> 194 Cys Ser Gly Ala Gln Val Xaa Gln Asn Asp Ala Ala Val
195   20   25
198 <210> SEQ ID NO: 4
199 <211> LENGTH: 55
200 <212> TYPE: PRT
201 <213> ORGANISM: Hirudo medicinalis
203 <400> SEQUENCE: 4
204 Thr Gln Gly Asn Thr Cys Gly Gly Glu Thr Cys Ser Ala Ala Gln Val
205 1   5   10   15
206 Cys Leu Lys Gly Lys Cys Val Cys Asn Glu Val His Cys Arg Ile Arg
207   20   25   30
208 Cys Lys Tyr Gly Leu Lys Lys Asp Glu Asn Gly Cys Glu Tyr Pro Cys
209   35   40   45
210 Ser Cys Ala Lys Ala Ser Gln
211   50   55
214 <210> SEQ ID NO: 5
215 <211> LENGTH: 70
216 <212> TYPE: PRT
217 <213> ORGANISM: Hirudo medicinalis
219 <400> SEQUENCE: 5
220 Thr Glu Phe Gly Ser Glu Leu Lys Ser Phe Pro Glu Val Val Gly Lys
221 1   5   10   15
222 Thr Val Asp Gln Ala Arg Glu Tyr Phe Thr Leu His Tyr Pro Gln Tyr
223   20   25   30
224 Asp Val Tyr Phe Leu Pro Glu Gly Ser Pro Val Thr Leu Asp Leu Arg
225   35   40   45
226 Tyr Asn Arg Val Arg Val Phe Tyr Asn Pro Gly Thr Asn Val Val Asn
227   50   55   60
228 His Val Pro His Val Gly
229 65   70

RAW SEQUENCE LISTING   DATE: 08/10/2006
PATENT APPLICATION: US/10/587,450   TIME: 10:46:41

Input Set : F:\14184-041US1.txt
Output Set: N:\CRF4\08102006\J587450.raw

```
232 <210> SEQ ID NO: 6
233 <211> LENGTH: 20
234 <212> TYPE: PRT
235 <213> ORGANISM: Bombyx mori
237 <400> SEQUENCE: 6
238 Asp Glu Pro Thr Thr Lys Pro Phe Cys Glu Gln Ala Phe Gly Asp Cys
239 1               5                   10                  15
240 Gly Thr Pro Tyr
241             20
244 <210> SEQ ID NO: 7
245 <211> LENGTH: 20
246 <212> TYPE: PRT
247 <213> ORGANISM: Bombyx mori
249 <400> SEQUENCE: 7
250 Asp Lys Pro Thr Thr Glu Pro Phe Ile Cys Glu Gln Arg Phe Gly Asn
251 1               5                   10                  15
252 Cys Gly Thr Gly
253             20
256 <210> SEQ ID NO: 8
257 <211> LENGTH: 66
258 <212> TYPE: PRT
259 <213> ORGANISM: Unknown
261 <220> FEATURE:
262 <223> OTHER INFORMATION: Synthetically generated peptide
264 <400> SEQUENCE: 8
265 Ile Thr Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
266 1               5                   10                  15
267 Glu Gly Ser Asn Val Cys Gly Lys Gly Asn Lys Cys Ile Leu Gly Ser
268             20                  25                  30
269 Gln Gly Lys Asp Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
270         35                  40                  45
271 Gln Ser His Asn Gln Gly Asp Phe Glu Pro Ile Pro Glu Asp Ala Tyr
272     50                  55                  60
273 Asp Glu
274 65
277 <210> SEQ ID NO: 9
278 <211> LENGTH: 20
279 <212> TYPE: PRT
280 <213> ORGANISM: Artificial Sequence
282 <220> FEATURE:
283 <223> OTHER INFORMATION: Hirudin variant
285 <400> SEQUENCE: 9
286 Phe Pro Arg Pro Gly Gly Gly Gly Asn Gly Asp Phe Glu Glu Ile Pro
287 1               5                   10                  15
288 Glu Glu Tyr Leu
289             20
292 <210> SEQ ID NO: 10
293 <211> LENGTH: 100
294 <212> TYPE: PRT
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 08/10/2006
PATENT APPLICATION: US/10/587,450   TIME: 10:46:42

Input Set : F:\14184-041US1.txt
Output Set: N:\CRF4\08102006\J587450.raw

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; Xaa Pos. 1,2,3,5,6,7,8,9,10,11,13,14,15,16
Seq#:3; Xaa Pos. 23
Seq#:814; Xaa Pos. 3
Seq#:815; Xaa Pos. 3,4
Seq#:816; Xaa Pos. 3,4,5
Seq#:817; Xaa Pos. 3,4,5,6
Seq#:818; Xaa Pos. 3,4,5,7
Seq#:819; Xaa Pos. 3,4,5,8
Seq#:820; Xaa Pos. 3,4,5,9
Seq#:821; Xaa Pos. 3,4,5,10
Seq#:822; Xaa Pos. 3,4,5,11
Seq#:823; Xaa Pos. 3,4,5,12
Seq#:824; Xaa Pos. 3,4,5,13
Seq#:825; Xaa Pos. 3,4,5,14
Seq#:826; Xaa Pos. 3,4,5,15
Seq#:827; Xaa Pos. 3,4,5,16
Seq#:828; Xaa Pos. 3,4,5,17
Seq#:829; Xaa Pos. 3,4,5,18
Seq#:830; Xaa Pos. 3,4,5,19
Seq#:831; Xaa Pos. 3,4,5,20
Seq#:832; Xaa Pos. 3,4,6
Seq#:833; Xaa Pos. 3,4,6,7
Seq#:834; Xaa Pos. 3,4,6,8
Seq#:835; Xaa Pos. 3,4,6,9
Seq#:836; Xaa Pos. 3,4,6,10
Seq#:837; Xaa Pos. 3,4,6,11
Seq#:838; Xaa Pos. 3,4,6,12
Seq#:839; Xaa Pos. 3,4,6,13
Seq#:840; Xaa Pos. 3,4,6,14
Seq#:841; Xaa Pos. 3,4,6,15
Seq#:842; Xaa Pos. 3,4,6,16
Seq#:843; Xaa Pos. 3,4,6,17
Seq#:844; Xaa Pos. 3,4,6,18
Seq#:845; Xaa Pos. 3,4,6,19
Seq#:846; Xaa Pos. 3,4,6,20
Seq#:847; Xaa Pos. 3,4,7
Seq#:848; Xaa Pos. 3,4,7,8
Seq#:849; Xaa Pos. 3,4,7,9
Seq#:850; Xaa Pos. 3,4,7,10
Seq#:851; Xaa Pos. 3,4,7,11
Seq#:852; Xaa Pos. 3,4,7,12
Seq#:853; Xaa Pos. 3,4,7,13
Seq#:854; Xaa Pos. 3,4,7,14
Seq#:855; Xaa Pos. 3,4,7,15

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 08/10/2006
PATENT APPLICATION: **US/10/587,450**   TIME: 10:46:42

Input Set : **F:\14184-041US1.txt**
Output Set: **N:\CRF4\08102006\J587450.raw**

```
Seq#:856; Xaa Pos. 3,4,7,16
Seq#:857; Xaa Pos. 3,4,7,17
Seq#:858; Xaa Pos. 3,4,7,18
Seq#:859; Xaa Pos. 3,4,7,19
Seq#:860; Xaa Pos. 3,4,7,20
Seq#:861; Xaa Pos. 3,4,8
Seq#:862; Xaa Pos. 3,4,8,9
```

<u>**Invalid Line Length:**</u>
The rules require that a line not exceed 72 characters in length. This includes spaces.

```
Seq#:817; Line(s) 10829,10831
Seq#:818; Line(s) 10849
Seq#:819; Line(s) 10866,10867
```

<pre>
        VERIFICATION SUMMARY   DATE: 08/10/2006
        PATENT APPLICATION: US/10/587,450   TIME: 10:46:42

             Input Set : F:\14184-041US1.txt
             Output Set: N:\CRF4\08102006\J587450.raw
</pre>

<pre>
L:13 M:270 C: Current Application Number differs, Replaced Current Application No
L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:107 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0
L:194 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:16
L:10772 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:814 after pos.:0
L:10791 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:815 after pos.:0
L:10810 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:816 after pos.:0
L:10829 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:817 after pos.:0
L:10848 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:818 after pos.:0
L:10866 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:819 after pos.:0
L:10884 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:820 after pos.:0
L:10906 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:821 after pos.:0
L:10928 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:822 after pos.:0
L:10949 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:823 after pos.:0
L:10970 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:824 after pos.:0
L:10990 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:825 after pos.:0
L:11010 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:826 after pos.:0
L:11030 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:827 after pos.:0
L:11050 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:828 after pos.:0
M:341 Repeated in SeqNo=828
L:11070 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:829 after pos.:0
M:341 Repeated in SeqNo=829
L:11090 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:830 after pos.:0
M:341 Repeated in SeqNo=830
L:11110 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:831 after pos.:0
.M:341 Repeated in SeqNo=831
L:11130 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:832 after pos.:0
L:11150 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:833 after pos.:0
L:11170 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:834 after pos.:0
L:11190 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:835 after pos.:0
L:11210 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:836 after pos.:0
L:11230 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:837 after pos.:0
L:11250 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:838 after pos.:0
L:11271 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:839 after pos.:0
L:11291 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:840 after pos.:0
L:11311 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:841 after pos.:0
L:11331 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:842 after pos.:0
L:11351 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:843 after pos.:0
M:341 Repeated in SeqNo=843
L:11371 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:844 after pos.:0
M:341 Repeated in SeqNo=844
L:11391 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:845 after pos.:0
M:341 Repeated in SeqNo=845
L:11411 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:846 after pos.:0
M:341 Repeated in SeqNo=846
L:11432 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:847 after pos.:0
L:11453 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:848 after pos.:0
L:11473 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:849 after pos.:0
</pre>

VERIFICATION SUMMARY   DATE: 08/10/2006
PATENT APPLICATION: US/10/587,450   TIME: 10:46:42

Input Set : F:\14184-041US1.txt
Output Set: N:\CRF4\08102006\J587450.raw

```
L:11493 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:850 after pos.:0
L:11513 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:851 after pos.:0
L:11533 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:852 after pos.:0
L:11553 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:853 after pos.:0
```